74F08
Quad 2-Input AND Gate

General Description
This device contains four independent gates, each of which performs the logic AND function.

Ordering Code:

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Package Number</th>
<th>Package Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>74F08SC</td>
<td>M14A</td>
<td>14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow</td>
</tr>
<tr>
<td>74F08SJ</td>
<td>M14D</td>
<td>14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide</td>
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<tr>
<td>74F08PC</td>
<td>N14A</td>
<td>14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide</td>
</tr>
</tbody>
</table>

Logic Symbol

Connection Diagram

Unit Loading/Fan Out

| Pin Names | Description | U.L. HIGH/LOW | Input I
\text{IH}/I
\text{IL} | Output I
\text{OH}/I
\text{OL} |
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A_n, B_n</td>
<td>Inputs</td>
<td>1.0/1.0</td>
<td>20 \mu A/−0.6 mA</td>
<td>−1 mA/20 mA</td>
</tr>
<tr>
<td>O_n</td>
<td>Outputs</td>
<td>50/33.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Absolute Maximum Ratings (Note 1)

- Storage Temperature: −65°C to +150°C
- Ambient Temperature under Bias: −55°C to +125°C
- Junction Temperature under Bias: −55°C to +150°C
- VCC Pin Potential to Ground Pin: −0.5V to +7.0V
- Input Voltage (Note 2): −0.5V to +7.0V
- Input Current (Note 2): −30mA to +5.0mA
- Voltage Applied to Output in HIGH State (with VCC = 0V): −0.5V to VCC
- Standard Output 3-STATE Output: −0.5V to +5.5V
- Current Applied to Output in LOW State (Max): twice the rated IOL (mA)
- ESD Last Passing Voltage (Min): 4000V

Recommended Operating Conditions

- Free Air Ambient Temperature: 0°C to +70°C
- Supply Voltage: +4.5V to +5.5V

DC Electrical Characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>VCC</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIH</td>
<td>Input HIGH Voltage</td>
<td>2.0</td>
<td></td>
<td>V</td>
<td></td>
<td></td>
<td>Recognized as a HIGH Signal</td>
</tr>
<tr>
<td>VIL</td>
<td>Input LOW Voltage</td>
<td>0.8</td>
<td></td>
<td>V</td>
<td></td>
<td></td>
<td>Recognized as a LOW Signal</td>
</tr>
<tr>
<td>VCD</td>
<td>Input Clamp Diode Voltage</td>
<td>−1.2</td>
<td>V</td>
<td>Min</td>
<td>VIH = −1.8mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOH</td>
<td>Output HIGH Voltage</td>
<td>10% VCC</td>
<td>2.5</td>
<td>V</td>
<td>Min</td>
<td>VOH = −1mA</td>
<td></td>
</tr>
<tr>
<td>VOL</td>
<td>Output LOW Voltage</td>
<td>10% VCC</td>
<td>0.5</td>
<td>V</td>
<td>Min</td>
<td>VOL = 20mA</td>
<td></td>
</tr>
<tr>
<td>IH</td>
<td>Input HIGH Current</td>
<td>5.0</td>
<td>µA</td>
<td>Max</td>
<td>VIN = 2.7V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IW</td>
<td>Input HIGH Current</td>
<td>7.0</td>
<td>µA</td>
<td>Max</td>
<td>VIN = 7.0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOH</td>
<td>Output HIGH Leakage Current</td>
<td>50</td>
<td>µA</td>
<td>Max</td>
<td>VOUT = VCC</td>
<td></td>
<td></td>
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<tr>
<td>VD</td>
<td>Input Leakage Test</td>
<td>4.75</td>
<td>V</td>
<td>0.0</td>
<td>VDD = 1.9µA All Other Pins Grounded</td>
<td></td>
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<tr>
<td>IO</td>
<td>Output Leakage Circuit Current</td>
<td>3.75</td>
<td>µA</td>
<td>0.0</td>
<td>VDD = 150mV All Other Pins Grounded</td>
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<tr>
<td>IL</td>
<td>Input LOW Current</td>
<td>−0.6</td>
<td>mA</td>
<td>Max</td>
<td>VIN = 0.3V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IB</td>
<td>Output Short-Circuit Current</td>
<td>−50</td>
<td>mA</td>
<td>Max</td>
<td>VOUT = 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDD</td>
<td>Power Supply Current</td>
<td>5.5</td>
<td>mA</td>
<td>Max</td>
<td>VDD = HIGH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICC</td>
<td>Power Supply Current</td>
<td>8.6</td>
<td>mA</td>
<td>Max</td>
<td>VDD = LOW</td>
<td></td>
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</table>

AC Electrical Characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>TA = −25°C</th>
<th>TC = +5.0V</th>
<th>TA = −55°C to +125°C</th>
<th>TC = +5.0V</th>
<th>TA = 0°C to +70°C</th>
<th>VCC = ±5.0V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>C L = 50 pF</td>
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</tr>
<tr>
<td>tPLH</td>
<td>Propagation Delay</td>
<td>3.0</td>
<td>4.2</td>
<td>5.6</td>
<td>2.5</td>
<td>7.5</td>
<td>3.0</td>
</tr>
<tr>
<td>tPHL</td>
<td>AIN, Bl to OIN</td>
<td>2.5</td>
<td>4.0</td>
<td>5.3</td>
<td>2.0</td>
<td>7.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Physical Dimensions inches (millimeters) unless otherwise noted

14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow
Package Number M14A
Physical Dimensions

14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
Package Number M14D

NOTES:
A. CONFORMS TO EIAJ ED1-720 REGISTRATION,
   ESTABLISHED IN DECEMBER, 1986.
B. DIMENSIONS ARE IN MILLIMETERS.
C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD
   FLASH, AND TIE BAR EXTENSIONS.

M14DRevB1

DIMENSIONS ARE IN MILLIMETERS

LAND PATTERN RECOMMENDATION

14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
Package Number M14D
Physical Dimensions in inches (millimeters) unless otherwise noted (Continued)

PIN NO. IDENT
1 2 3 4 5 6 7 8 9 10 11 12 13 14

0.740 - 0.270
(18.80 - 19.56)

0.990
(2.51)

0.250 - 0.810
(6.35 - 20.54)

0.092
(2.33)

0.033
(0.83)

0.203
(5.16)

INDEX AREA

OPTION 02

14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N14A

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